INAUGURAL LECTURE

by Research Professor D. Hill

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Queensland is just as rich in fossil corals and coral reefs as it is in living corals and growing reefs. Thus it is natural that we Queenslanders should specialise in all aspects of their study and its applications. Studies on their microstructure are of great interest, needing a combination of biochemistry and crystallography, and could be carried out at our Marine Biological Station on Heron Island.

Geologically one of the most important applications of the study of fossil corals is the determination of the small-scale relative ages of the sediments or strata in which they are buried. For it is by this that we work out the structures of our rocks. Geological and structural maps owe much to knowledge contributed by fossil corals, and the petroleum geologist originates his prospecting campaigns from study of these maps. The maps show that the greater part of Queensland is occupied by sedimentary basins, all deserving prospecting for petroleum.

Regions where fossil reefs have been buried are amongst the many regions that have proved petroliferous overseas. The environment in which corals flourish is rich in marine plankton, which is probably the main source for oil. The rocks formed in it include types suitable as source and as reservoir rocks, and also provide initial traps for the oil.

Prospecting under the Great Barrier Reef is thus attractive. But we also have rich, fossil reefs inland in the eastern half of our State. Rich Silurian and Devonian reefs, hundreds of millions of years old, are now exposed at the surface in North Queensland, and in New South Wales. Devonian reefs appear in the basement between our eastern basins, and Carboniferous reefs are known in one of these basins. Where they outcrop, these old reefs are in areas that have been broken and hardened by crustal movements, making them less attractive as prospects than they would

otherwise have been. But since these ancient reef belts must have been continuous from North Queensland to New South Wales, it follows that many buried reefs must exist beneath younger formations in our eastern basins, and in many places these must have been protected from adverse movements. Exploration and research could locate them, but owing to the nature of our geological history, the cost would be high.

We have, of course, many other good non-reef regions with petroleum potential in our Queensland sedimentary basins.

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